

REMARKS/ARGUMENTS

Claims 1 and 3-20 are currently pending. Claims 1, 3-6, 10 and 12 are amended herein. Support for amended claims 1, 3-6, 10 and 12 is found in the specification as originally filed, *inter alia*, in paragraphs [010], [011]-[013], and Example 1. Accordingly, Applicant believes that no new matter is introduced in the filing of this Amendment. Applicant respectfully requests reconsideration of the rejection of claims 1 and 3-20 for the following reasons.

The present invention is directed to a catalyst for conversion of N₂O. Specification, ¶ [002]. The catalyst comprises ferrierite/iron assaying from 1 to 6% iron by weight in ion exchange position, with a potassium ion content in exchange position from 0.1-0.5%. Specification ¶¶ [011]-[013].

I. 35 U.S.C. § 112 Rejection:

Claim 4 stands rejected under the second paragraph of 35 U.S.C. § 112 as allegedly failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention and for depending from itself. Claim 4 is amended herein to depend from claim 3 thereby distinctly claiming the subject matter which applicant regards as the invention. Claim 4 is also amended to clarify “agglomeration binder” by providing an article therefor. Accordingly, it is respectfully requested that the 35. U.S.C. § 112 rejection of claim 4 be withdrawn.

II. U.S. Patent No. 5,589,147 (“the ’147 patent”):

A. 35 U.S.C. § 102(b):

The Office Action states that claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by the ’147 patent. The Office action alleges that “[the ’147 patent] discloses a catalyst for reduction of NO_x, including nitrous oxide comprising ferrierite, zeolite, and about 2% iron.” Office Action dated March 10, 2006, p. 3 (citations omitted).

It is well established that “[a] claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” M.P.E.P. § 2131 (citation omitted). The rejection of claim 1 over the ’575 patent is improper at least because the ’575 patent fails to disclose iron in ion exchange position as claimed by Applicant or the amount of potassium claimed by Applicant.

The '147 patent is directed to a method for treating an exhaust gas comprising NO_x and ammonia with a catalyst comprising a molecular sieve which has been physically mixed with a metal and a binder. Col. 2, ll. 38-50. The molecular sieves are taught to be selected from, but not limited to, “all metallosilicates, metallophosphates, silicoaluminophosphates, and layered and pillared layered materials.” Col. 6, ll. 48-56 (emphasis added). Specific examples of molecular sieves useful in the '147 patent are selected from at least 36 different types of molecular sieves. *See* col. 6, ll. 56-65; col. 7, ll. 17-26. At least 11 particularly useful sieves are disclosed, none of which are ferrierite. *See* col. 6, l. 66-col. 7, l. 26. The original ion of the molecular sieve is taught to be replaceable with other ions; the only example being ammonium. Col. 9, ll. 5-11. There is no teaching of substituting the original ions with iron ions. Potassium is taught to be present to the catalyst if desired. Col. 10, ll. 6-9. Metal loading onto the sieve, which involves mixing of the a metal with the molecular sieve, is taught to be selected from metals of Group IIIA, IB, IIB, VA, VIA, VIIA, VIIIA and combinations thereof. Col. 2, l. 38-col. 3, l. 17; col. 9, ll. 21-33. The metals are taught to be either elemental, oxides, sulfides or other metal containing compounds. Col. 9, l. 40-col. 10, l. 5.

The '147 patent fails to disclose a catalyst for conversion of N₂O comprising a ferrierite/iron assaying from 1 to 6% iron by weight in ion exchange position and 0.1 to 0.5% of potassium by weight in ion exchange position. The '147 patent does not disclose ferrierite/iron catalysts with iron in ion exchange position. Metal loading onto the molecular sieve is disclosed, but the metal loading is disclosed to be an admixture or mixture of the metal with the molecular sieve, not an ion exchange with the original ions of the ferrierite. Furthermore, the metals used in the '147 patent are selected from, e.g., metal oxides and sulfides, such as ferrous oxide and ferric oxide, which do not have an overall charge and are not capable of being in an ion exchange position.

Furthermore, the '147 patent fails to disclose the amount of potassium in ion exchange position claimed by Applicant. The '147 patent simply states that potassium may be present “if desired.” Col. 10, ll. 6-9. There is no recitation of how much potassium should be used, even if it were desired, which the neither the Office Action nor the '147 patent demonstrate.

For at least the foregoing reasons, the '147 patent fails to disclose each and every element of claim 1 and does not, therefore, anticipate claim 1. As such, an anticipation rejection under 35

U.S.C. § 102(b) is improper and Applicant respectfully requests that the rejection of claim 1 over the '147 patent be withdrawn.

B. 35 U.S.C. § 103(a):

The Office Action states that claims 2-20 are rejected under 35 U.S.C. § 103(a) as being rendered obvious by the '147 patent. Applicant traverses. Claim 2 has been cancelled, rendering the rejection thereto moot. Currently amended claim 1 incorporates the limitations of previously presented claim 2. Thus, in order to be fully responsive, Applicant addresses the rejection with regard to claims 1 and 3-20 below.

Applicant respectfully submits that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed invention. It is well established under 35 U.S.C. § 103(a) that the mere fact that the prior art can be modified does not make such modification obvious unless the prior art suggests the desirability of the modification. MPEP § 706.02(j) states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections.

As discussed *supra*, the '147 patent fails to disclose, teach or suggest a catalyst for conversion of N₂O comprising a ferrierite/iron assaying from 1 to 6% iron by weight in ion exchange position and 0.1 to 0.5% of potassium by weight in ion exchange

position. The '147 patent does not disclose, teach or suggest ferrierite/iron catalysts with iron in ion exchange position.

Furthermore, it is noted that previously presented claim 2 was not rejected as being anticipated by the '147 patent, but by being rendered obvious thereby. The Office Action has provided no motivation, suggestion or teaching, however, for one of ordinary skill in the art to arrive at a ferrierite/iron catalyst for conversion of N₂O comprising a ferrierite/iron composition assaying from 1 to 6% iron by weight in ion exchange position and 0.1 to 0.5% of potassium by weight in ion exchange position. By rejecting claim 2 under 35 U.S.C. § 103(a) rather than 35 U.S.C. § 102(b), the Office Action implicitly admits that there is no disclosure in the '147 patent of a catalyst comprising the claimed amount of potassium in ion exchange position. The Office Action fails to even address this limitation, however, in the obviousness rejection. The Office Action fails to provide any motivation, suggestion, or teaching for arriving at the claimed amount of potassium in ion exchange position. Thus, the Office Action has failed to establish a *prima facie* case of obviousness.

For at least the foregoing reasons, the '147 patent fails to provide a suggestion or motivation to arrive at the invention claimed in claims 1 and 3-20 and does not, therefore, render any of claims 1 and/or 3-20 obvious. As such, an obviousness rejection under 35 U.S.C. § 103(a) over claims 1 and/or 3-20 is improper. Accordingly, Applicant respectfully submits that the rejection be withdrawn.

III. U.S. Patent No. 4,002,575 (“the '575 patent”):

A. 35 U.S.C. § 102(b):

The Office Action states that claim 1 is rejected under 35 U.S.C. § 102(b) as being anticipated by the '575 patent. The Office action alleges that “[the '575 patent] discloses catalysts comprising zeolite and ferrierite, [and] 1-20% iron.” Office Action dated March 10, 2006, at p. 3 (citations omitted). Applicant traverses.

Because Applicant has amended claim 1 to incorporate the limitations of claim 2, the rejection has been overcome. As the Office Action admits, the '575 patent “fails to disclose 0.5-0.1% [potassium] as ions in exchange position.” Office Action, p. 4. Accordingly, currently amended claim 1 is not anticipated by the '575 patent because “[a] claim is anticipated only if

each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference.” M.P.E.P. § 2131 (citation omitted).

For at least the foregoing reasons, the '575 patent fails to disclose each and every element of claim 1 and does not, therefore, anticipate claim 1. As such, an anticipation rejection under 35 U.S.C. § 102(b) is improper and Applicant respectfully requests that the rejection of claim 1 over the '575 patent be withdrawn.

B. 35 U.S.C. § 103(a):

The Office Action states that claim 2 is rejected under 35 U.S.C. § 103(a) as being rendered obvious by the '575 patent. Applicant traverses. Claim 2 has been cancelled, rendering the rejection thereto moot. The limitations of cancelled claim 2 have been incorporated into currently amended claim 1. Therefore, in order to be fully responsive, Applicant addresses the rejection with regard to currently amended claim 1 below.

Applicant respectfully submits that it would not have been obvious to one of ordinary skill in the art at the time the invention was made to arrive at the claimed invention. It is well established under 35 U.S.C. § 103 that before a *prima facie* case of obviousness can be established, the Graham v. John Deere factors must be addressed. M.P.E.P. § 2141(I) states:

Patent examiners carry the responsibility of making sure that the standard of patentability enunciated by the Supreme Court and by the Congress is applied in each and every case. The Supreme Court in *Graham v. John Deere*, 383 U.S. 1, 148 USPQ 459 (1966), stated:

Under § 103, the scope and content of the prior art are to be determined; differences between the prior art and the claims at issue are to be ascertained; and the level of ordinary skill in the pertinent art resolved. Against this background, the obviousness or nonobviousness of the subject matter is determined. Such secondary considerations as commercial success, long felt but unsolved needs, failure of others, etc., might be utilized to give light to the circumstances surrounding the origin of the subject matter sought to be patented. As indicia of obviousness or nonobviousness, these inquires may have relevancy...

The '575 patent is directed to a method of rejuvenating Group VIII catalysts. Title. Such catalysts comprise a group VIII metal supported on a zeolite base. Col. 5, line 63-Col. 6, line 3. The method of the '575 patent is taught to be useful for catalysts comprising siliceous zeolites, generally. Suitable zeolites are recited to be selected from a list of 12 specific zeolites and “the like,” one of which is ferrierite. Col. 6, lines 3-8. It is noted that there are at least 9 Group VIII metals, but the noble metals, such as palladium and platinum are disclosed by the '575 patent as

being particularly preferred. The '575 patent fails to disclose the catalyst of the instant claims, namely those comprising ferrierite/iron.

The claimed invention is directed to a on catalyst for conversion of N₂O comprising a ferrierite/iron assaying from 1 to 6% iron by weight in ion exchange position and 0.1 to 0.5% of potassium by weight in ion exchange position.

As the Office Action admits, the '575 patent "fails to disclose 0.5-0.1% [potassium] as ions in ion exchange position." Office Action, p. 4. Furthermore, the '575 patent fails to disclose at least ferrierite with iron and the amount of iron in ion exchange position.

It is well established that the mere fact that the prior art can be modified does not make such modification obvious unless the prior art suggests the desirability of the modification.

MPEP § 706.02(j) states:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP § 2143 - § 2143.03 for decisions pertinent to each of these criteria.

The initial burden is on the examiner to provide some suggestion of the desirability of doing what the inventor has done. "To support the conclusion that the claimed invention is directed to obvious subject matter, either the references must expressly or impliedly suggest the claimed invention or the examiner must present a convincing line of reasoning as to why the artisan would have found the claimed invention to have been obvious in light of the teachings of the references." *Ex parte Clapp*, 227 USPQ 972, 973 (Bd. Pat. App. & Inter. 1985). See MPEP § 2144 - § 2144.09 for examples of reasoning supporting obviousness rejections.

The '575 patent does not disclose a catalyst for conversion of N₂O comprising ferrierite/iron, nor does the Office Action provide any suggestion, teaching or motivation for selecting ferrierite from either the broad teaching of zeolites or the lengthy list of specific zeolites. Nor does the '575 patent provide any suggestion, teaching or motivation for selecting iron from the broad teaching of Group VIII metals, particularly when the noble metals are disclosed by the '575 patent to be the preferred Group VIII metals. Nor does the '575 patent

provide any suggestion, teaching or motivation for selecting potassium in an amount of 0.1-0.5% by weight in ion exchange position. In other words, in order to arrive at the claimed invention, one of ordinary skill in the art would have had to choose the claimed components from three separate lists of components and then would have had to also select the particularly claimed components in the amounts claimed. The Office Action provides no motivation for such selections, however; “[t]he prior art must suggest the desirability of the claimed invention.” M.P.E.P. § 2143.01(I).

With regard to the metal used, the '575 patent specifically teaches that the “noble metals, particularly palladium and platinum, are preferred [therein].” Col. 6, ll. 34-35. Accordingly, one of ordinary skill in the art would have been motivated to utilize a metal in combination with a zeolite recited in the '575 patent, not iron, as is claimed by Applicant.

With regard to the amount of potassium present in the catalyst, the Office Action alleges, “It would have been obvious to one of ordinary skill in the art at the time of the invention was made to use 0.5-0.1% as ions in exchange position of the potassium of [the '575 patent] because [the '575 patent] discloses it is preferable to replace most or all of the zeolitic sodium and/or potassium with other cations … which would motivate the ordinary artisan to replace potassium to values approaching zero at least including 0.5-0.1%.” Office Action, p. 4 (internal citation omitted). First, it is unclear how a teaching that it is preferred to replace most or all of the sodium and/or potassium with other cations would lead one of ordinary skill in the art at the time of the invention to an amount of 0.1-0.5%; such a teaching would appear to suggest an amount of zero potassium, not an amount of 0.1-0.5% potassium. Second, it is unclear what exactly one of ordinary skill in the art would be optimizing by varying the amount of potassium. “Only results effective variables can be optimized.” M.P.E.P. § 2144.05 (II)(B). The '575 patent is directed to a method of rejuvenating catalysts, not to any catalyst in particular, so it is unclear what the result of limiting the amount of sodium and/or potassium would be; the '575 patent certainly doesn’t provide any motivation to optimize the amount of potassium in the catalyst to arrive at the claimed amount of potassium in a catalyst for the conversion of N₂O, as claimed by Applicant.

The Office Action apparently picks and chooses components from the '575 patent in the amounts claimed by Applicant with no apparent motivation or goal except for that disclosed in Applicant’s own specification. Thus, the '575 patent can only be interpreted as rendering the claimed invention obvious via impermissible hindsight reconstruction.

Furthermore, in the generic listing of possible zeolites suitable for being rejuvenated by the method of the '575 patent, the '575 patent lists, along with ferrierite, such molecular sieves as Y and mordenite. *See* col. 6, ll. 4-8. Indeed, the molecular sieve Y is selected for use in Example 1 of the '575 patent. *See* col. 7, l. 23-col. 8, l. 2. Applicant's catalyst exhibits unexpected results when compared to catalysts comprising the Y and mordenite zeolite selections. The ferrierite/iron comprising catalysts of Applicant's invention are shown by Applicant to be more effective than the Y and mordenite or zeolite analogs thereof at converting N₂O when the N₂O is present in lower concentrations, such as 1000 ppm. *See* Specification, Example 4. Furthermore, in the presence of water vapor, significant conversion of N₂O was shown by Application to have occurred via the use of ferrierite/iron, but not Y/iron and mordenite/iron. *See* Specification, pp. 8, 10-11, Example 4. Applicant has also shown that catalysts comprising ferrierite/iron are effective at converting N₂O for longer periods of time (i.e. they last longer) than other zeolite/iron catalysts such as mordenite/iron. *See* Specification, Example 6. Finally, even at high concentrations of N₂O (5%), the iron content of the ferrierite/iron catalysts of the claimed invention can be adjusted within the claimed range such that the ferrierite/iron catalysts outperform a mordenite/iron catalyst under most operating conditions. *See* Specification, Example 5.

For at least the foregoing reasons, the '575 patent fails to provide a suggestion or motivation to arrive at the claimed invention. As such, an obviousness rejection under 35 U.S.C. § 103(a) over currently amended claim 1 would be improper.

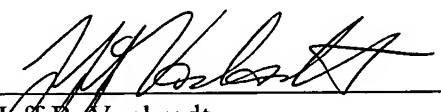
All pending claims consequently distinguish over the references applied in the Office Action. This application is therefore in condition for allowance, acknowledgment of which the Applicant respectfully solicits. Should, however, the Examiner discover any remaining issues before allowance, the Examiner is kindly invited to contact the undersigned by telephone to expedite the resolution of the same.

In the event any variance exists between the amount authorized to be charged to the Deposit Account and the Patent Office charges, please charge or credit any difference to the undersigned's Deposit Account No. 50-0206.

Respectfully submitted,

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